WASHINGTON STATE DEPARTMENT OF
Natural Resources
PETER GOLDMARK - Commissioner of Public Lands

STATEMENT OF WORK

SUBMITTED TO

STATE OF WASHINGTON, DEPARTMENT OF NATURAL RESOURCES

BY THE

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

MAPPING AND MODELING SUPPORT
FOR MARINE SPATIAL PLANNING

NOS Agreement Code: MOA-2013-038(Annex 002)/8963
IAA 14-382

A. This Memorandum of Agreement (Agreement) is between the U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS) through the National Centers for Coastal Ocean Science (NCCOS), and the State of Washington, Departments of Natural Resources (DNR) and Ecology (Ecology), hereinafter referred to as the "Parties".

B. The purpose of this Umbrella Agreement is to ensure optimum efficiency and maximum benefit to the United States by establishing a framework for cooperation and coordination between Parties. The Agreement is necessary and essential to further the mission of the Parties in that it will serve as an umbrella that sets forth the general terms and conditions under which the Parties may seek cooperative programs and activities, and acts as an instrument to more effectively carry out scientific and management responsibilities associated with each Party.

I. Background

Marine spatial planning (MSP) is a planning process that enables integrated, forward looking, and consistent decision making on the human uses of the oceans and coasts. It can improve marine resource management by planning for human uses in locations that reduce conflict, increase certainty, and allow us to balance and maximize the social, economic, and ecological benefits we receive from ocean resources.

In March 2010, the Washington state legislature enacted a marine spatial planning law to address resource use conflicts in Washington waters. In 2011, a report to the legislature and a workshop on human use data provided guidance for the marine spatial planning process. The report outlines a set of recommendations for the state to effectively undertake marine spatial planning and this work plan will support some of these recommendations, such as: federal integration, regional coordination, developing mechanisms to integrate scientific and technical expertise, developing data standards, and accessing and sharing spatial data.

In 2012 the Governor amended the law to focus funding on mapping and ecosystem assessments for Washington's Pacific Coast and the legislature provided $2.1 million in funds to begin marine spatial planning off Washington's coast. The funds are appropriated through the Washington Department of Natural Resources Marine Resources Stewardship Account with coordination among the State Ocean Caucus, the four coastal treaty tribes, four coastal Marine Resource Committees and the newly formed stakeholder body, the Washington Coastal Marine Advisory Council.

In 2013 the Biogeography Branch provided mapping and technical support to the state of Washington for their marine spatial plan. The work was completed under the same MOA (MOA-2013-038) and culminated in the *Final report: NCCOS Technical and mapping support for marine spatial planning* (June 2013) sent to Washington. This report identified and evaluated seafloor, seabird, deep-sea coral and sponge datasets needed to support a range of marine spatial planning issues by the state of Washington. The physical and ecological targets of the report were chosen by the Washington Department of Ecology, with input from the State Ocean Caucus, to represent priority data sets needed for marine spatial planning along Washington's outer coast.

The Biogeography Branch has vast experience compiling and analyzing geospatial data needed for marine resource management and coastal planning; providing scientific and technical assistance to states; managing large Federal/State/Academic seafloor mapping projects; and developing species distribution and benthic habitat mapping products. The Branch has explicit expertise for finding, accessing and integrating ecological datasets; identifying priority data gaps; deriving maps from existing data; and, developing innovative technological approaches for sharing maps and spatial data to a wide audience. The Branch has successfully completed work similar to what is described in this statement of work throughout many U.S. coastal states, including Oregon, Connecticut and New York.

II. Purpose

This statement of work (SOW) describes technical tasks to be completed by the Biogeography Branch for Washington's Departments of Natural Resources (DNR). The tasks described in this SOW will provide scientific and technical support for marine spatial planning in waters off of Washington.

III. Scope of Work

The NOAA Biogeography Branch will:

A. Spatially prioritize the outer coast of Washington for future seafloor mapping activities and capture the underlying drivers and management needs associated with those priorities.
B. Develop species distribution models for key seabird species along the outer coast of Washington, and evaluate marine mammal datasets.

IV. Technical Specifications

NOAA will provide experienced personnel to perform duties which include, but are not limited to the following two tasks listed in sections A and B. Each task is organized by discrete subtasks with estimated planned timelines and deliverables. A timeline and budget follows the description of tasks. In addition to the work associated with each of the individual tasks, the Branch will coordinate tasks to ensure deliverables are consistent and timed, when possible, to support with regional/local planning activities.

All of the work listed in section IV.A is contingent on WA State submitting to NOAA the names and contact information for 2-3 people who will serve on a Technical Advisory Team, and orchestrating and securing their time to perform the duties described in this statement of work. In addition, WA State will identify the *primary* State contact and counterpart to NOAA who will provide critical consultative planning guidance, logistical, and leadership support with NOAA.

A. Seafloor Mapping Spatial Prioritization

The following task(s) implements the activities described in the Blueprint for Spatial Prioritization provided to the State of Washington in the Final Report – Technical and mapping Support for Washington Marine Spatial Planning. The objective of the effort will be to spatially prioritize the outer coast of Washington for future seafloor mapping activities and capture the underlying drivers and management needs associated with those priorities. This facilitated effort using a web-based tool designed by NCCOS is intended to capture the requirements of vested parties so as to provide a consolidate analysis that can be used to support, leverage, plan, and justify future efforts and investments in seafloor mapping.

1. **Phase I: Establish Technical Advisory Team and Spatial Prioritization Pre-Planning**
   A Technical Advisory Team comprised of key State and Federal members will be identified and charged with the Spatial Prioritization pre-planning efforts. It is anticipated that the Team will be comprised of 3-4 persons, one of which will be Tim

Battista from NOAA. Phase I Pre-Planning tasks include, but are not limited to the following:

- Descriptions of Interim and Final outcomes developed.
- Descriptions of exercise Phases and draft timelines developed.
- Planning workshop Agencies and Participants identified.
- Approach for collecting participant input discussed.
- Tasks assignments made for next steps.
- Agenda, presentations, read-ahead materials, and logistics for workshop developed.
- Prepare data viewer of existing seafloor mapping information
- Invitations for Planning Workshop sent out.
- Begin coding development of web-based Spatial Prioritization Tool.

2. Phase II: Spatial Prioritization Planning Workshop Part 1

The task entails planning, conducting, and summarizing a workshop to plan the activities and content of the Spatial Prioritization Exercise (Task 3). Participants will include the Technical Advisory Team as well as other key State, Federal, and additional parties. A one-day workshop will be conducted either on-site or via Webex (to be determined by the State If the State prefers an on-site Workshop, they will arrange the logistics of the venue, any costs associated with using the venue, and travel associated with participants attending the Planning Workshop. The Planning Workshop tasks include, but are not limited to the following:

- Presentations from selected managers on seafloor mapping product needs.
- Presentations from Technical Experts on seafloor mapping technical approaches, product types, challenges, and considerations.
- Discussion on the proposed approach (i.e. Spatial Prioritization outcomes and objectives; timelines and phases; and next steps).
- Presentation on the proposed Spatial Prioritization Exercise approach and Data Viewer.
- Breakout exercises with managers to refine Exercise questionnaire and capture details on products needed to support marine planning.
- Agency representatives selected to conduct the spatial prioritization exercise.
- Compile Workshop findings and action items in report.
- Continue development of web-based Spatial Prioritization Tool.

A report with compiled findings and action items identified during the workshop will be delivered June 2015.

3. Phase III: Conduct Spatial Prioritization Exercise

This task entails conducting a Web-based Spatial Prioritization by Agency representatives. Post Exercise analysis will be conducted by NOAA. The Spatial Prioritization Exercise tasks include, but are not limited to the following:

- Spatial Prioritization memo sent to participants that were selected to represent and consolidate input for their respective agency.
- Key Components of Exercise include:
  A. Web-based data viewer which compiles existing seafloor mapping information and spatial grid for organizing input (completed)
  B. Online Spatial Prioritization Tool to support user entry
- Each participant completes prioritization using the Prioritization Tool based on input criteria established by the Technical Advisory Committee.
- Input is submitted to the Technical Advisory Team for further spatial and thematic analysis.

4. Phase IV: Spatial Prioritization Workshop Part 2

The task entails presenting the results and analysis from the Spatial Prioritization Exercise (Task 3) to Agency representatives. The Workshop is intended to further refine results to achieve consolidated consensus. A one-day workshop will be conducted either on-site or via Webex (to be determined by the State). If the State prefers an on-site Workshop, they will arrange the logistics of the venue, any costs associated with using the venue, and travel associated with participants attending the Workshop. A Technical Report on the Spatial Prioritization Process and results will be provided at the conclusion of this task. The Workshop tasks include, but are not limited to the following:

- Workshop participants are sent results of spatial prioritization exercise prior to the workshop.
- Exercise results are presented to the group
- Participants modify and consolidate exercise results to produce consensus.
- For each High priority region, the participants identify the types of products needed to support management needs identified in the survey and further clarify the explicit management needs of each high priority area.
- Strategize on resources and funding to complete seafloor mapping in high priority areas.
- Compile Workshop findings and action items in report including details on the high priority areas identified
- Post-Workshop Activities (Multiple Months)
  Outreach and coordination\

A report with compiled findings and action items identified during the second workshop will be delivered June 2015.

B. Ecological Modeling

Washington is in the process of compiling spatial datasets to identify unique and vulnerable areas. The Biogeography Branch will support Washington's efforts by identifying and evaluating datasets which may be helpful and deriving seabird species distribution models for numerous important species.

1. **Evaluation of marine mammal datasets**

   The Biogeography Branch will identify and evaluate existing datasets which: include information on marine mammal occupancy and abundance in the study area, have been collected since 2000 and are not parts of the WDFW dataset compilation.

   Given WDFW's current work on state datasets, our focus will be on datasets from federal agencies and academic institutions. We will identify biological experts and data collectors to assist with data discovery and compile survey metadata.

   The evaluation will include a list of datasets with information on the source of data, and its spatial extent, temporal frequency, resolution, and reason for collections. The evaluation will assess the cumulative spatial and temporal distributions of all datasets, and provide recommendations for how to use the data to develop seasonal distribution maps for marine mammals. The inventory and evaluation will be provided to the state in a brief technical report. We will request digital data and permission to share the data from each source, but it's possible not all data sources will be willing to share.

   Technical report with the marine mammal dataset evaluation will be delivered Dec 2014

2. **Development of at-sea seabird distribution maps**

   The Biogeography Branch will develop predictive seabird distribution maps from readily available near shore and offshore ecological surveys collected by state and federal sources. Data from the Washington Department of Fish and Wildlife, Southwest Fisheries Science Center, Northwest Fisheries Science Center and United State Geological survey will be requested. The Biogeography Branch will evaluate data and select a modeling technique (e.g. regression or krigging) that best fits the distribution of data and generates continuous hotspots maps in state and federal waters.

   Spatial models will be developed for individual species and seasons with sufficient data to create reasonably accurate predictions. Accuracy will be determined using cross validation. Models for the following species (identified by the Washington Department of Ecology) will be developed: marbled murrelet (*Brachyramphus marmoratus*), tufted puffin (*Fratercula cirrhata*), common murre (*Uria aalge*), sooty shearwater (*Puffinus griseus*), northern fulmar (*Fulmarus glacialis*), and black-footed albatross (*Phoebastria nigripes*). Maps of occupancy will be developed for species with sufficient data.

A technical report will be delivered June 2015 documenting the data sets and methods used for species distribution modeling.

V. Period of Performance

The period of performance for this work shall extend from July 1, 2014 to June 30, 2015.

VI. Project Timeline

The Biogeography Branch will work on the various tasks identified in Section IV (Technical Specifications) according to the schedule outlined below.

Tasks	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Project Coordination												
Handoff meeting												■
Seafloor Mapping Spatial Prioritization												
Phase I	■	■										
Phase II			■	■	■							
Phase III						■	■	■				
Phase IV									■	■	■	
Marine mammal data evaluation												
Data gathering, review and reporting	■	■	■	■	■	■						
Seabird Maps												
Scoping, data gathering and processing	■	■										
Model development			■	■	■	■	■	■				
Model documentation and distribution									■	■	■	■

Deliverable deadlines:

December 2014

- Report with the evaluation of marine mammal datasets and progress on other project tasks;

June 2015

- Report with compiled findings and action items identified during the first and second spatial prioritization workshops
- Technical report with documentation of the data sets and methods used for species distribution modeling and seabird maps.